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IDENTIFIERS *PLANTRAN II

ABSTRACT

PLANTRAN II is a system of computer software designed to assist educational administrators in their planning and analysis activities. The unique feature of PLANTRAN II is that it requires no computer programming experience or expertise. Users with technical background have found PLANTRAN II helpful in their analyses without reducing the complexity and sophistication of their work. Specifically, administrators use the system to build computer models. The booklet makes minimum use of text and maximum use of graphs and figures. (Author)

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Midwest Research Institute

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL AERONAUTICS & SPACE ADMINISTRATION

An Introduction to PLANTRAN II



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This booklet is designed to provide you with the essential information about PLANTRAN II. Since this format makes minimum use of text and maximum use of graphs and figures, you will be able to go through the booklet in about 15 minutes. The continuity of the presentation will be enhanced if you always keep two pages in view.



PLANTRAN II

**A SIMULATION SYSTEM
FOR EDUCATIONAL PLANNING**

PLANTRAN II is a system of computer software designed to assist educational administrators in their planning and analysis activities. The unique feature of PLANTRAN II is that it requires no computer programming experience or expertise. Hundreds of administrators, most with no technical training or experience, have become proficient in the use of PLANTRAN II after a day of instruction and practice. Users with technical background have found PLANTRAN II helpful in their analyses without reducing the complexity and sophistication of their work.

Specifically, administrators use PLANTRAN II to build computer MODELS.

MODEL

A model is the representation of an object or system which is designed to look like or act like the real thing. There are different types of models. For example:

- Physical models
 - Airplane models
 - Toy trains
 - Architect's mock-up
- Schematic models
 - Blueprints
 - Organizational charts
 - Electronic circuit
- Mathematical models
 - Algebraic formula
 - Questionnaires
 - Budget

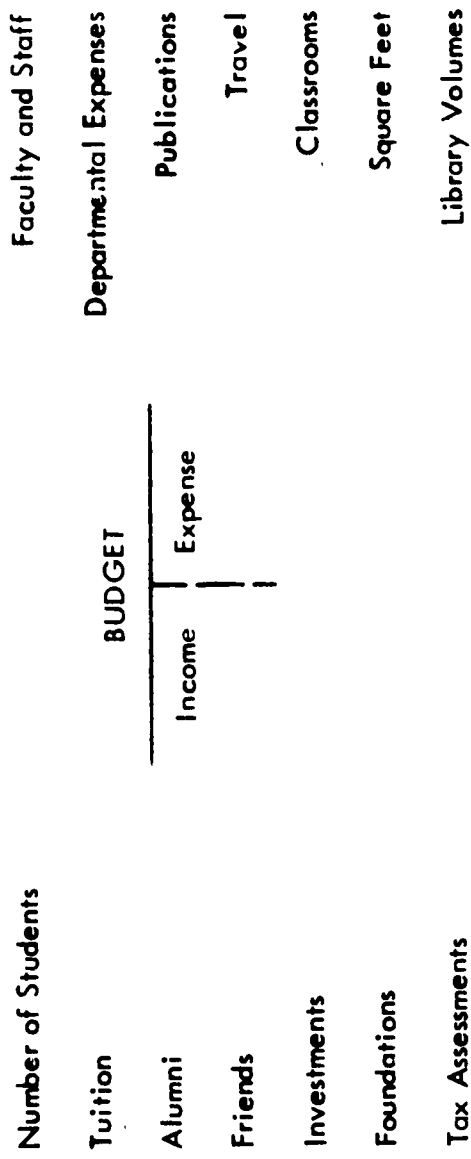
While we may not often think of it this way, a college budget is a model. It is a set of mathematical statements which describe a college.

A COMMON MATHEMATICAL MODEL IN HIGHER EDUCATION

THE COLLEGE BUDGET	
Tuition	Instruction
Gifts	Library
Grants	Administration
Endowment	Physical Plant
Taxes	
TOTAL INCOME	TOTAL EXPENSE

To develop a budget model of a college or university, the planner will have to include several nonbudget items. These are the policy and environmental factors which determine income and expense.

AN INSTITUTIONAL MODEL BASED ON BUDGET STRUCTURE



The Planning Framework or Matrix:

<u>Planning Item</u>	<u>Current</u>	<u>Next Year</u>	<u>Two Years</u>	<u>Year After That</u>
Students				
Faculty				
Income				
Expense				
Books				
.				
.				
.				

While PLANTRAN II models are not all budget models, they all are constructed in a matrix format. In many applications, the matrix rows are planning items and the columns are time periods. The figure above is an example of that kind of matrix.

The Planning Framework or Matrix:

<u>Planning Item</u>	<u>English</u>	<u>Chemistry</u>	<u>Psychology</u>	<u>Biology</u>
Faculty Salaries	_____	_____	_____	_____
Fringe Benefits	_____	_____	_____	_____
Clerical	_____	_____	_____	_____
Equipment	_____	_____	_____	_____
Supplies	_____	_____	_____	_____
Total	_____	_____	_____	_____

In other applications, the matrix columns do not represent time. The example above uses the columns to represent departments within a college. Columns can also be used to represent a different set of assumptions underlying the same model. Thus the columns could be different budgets for 1 year. You can see that the matrix format is very flexible and applicable to a wide variety of planning and analysis activities.

IDENTIFICATION

ORGANIZATION	MODEL DESCRIPTION	DATE	BASE PERIOD				T	M	R	T - TIME PERIOD M - HEADLINE R - REPLACEMENT		RUN NO
	24 25	40 41	36 37	60 61	63	65						78 80

COLUMNAR HEADINGS - OPTIONAL

PERIOD 1	PERIOD 2	PERIOD 3	PERIOD 4	PERIOD 5	PERIOD 6	PERIOD 7	PERIOD 8	PERIOD 9	PERIOD 10	PERIOD 11	PERIOD 12
67	12 13	18 19	24 25	30 31	36 37	42 43	48 49	54 55	60 61	66 67	72

MODEL SPECIFICATION

LINE NO	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION	
1	45	28 29	40 41	44 45

SUMMARY REPORTS

REPORT TITLE	FREEFORM REPORT LINES	
1	24 25	80

To develop these planning matrices, PLANTRAN II
uses the input formats shown above.

what you do

ORGANIZATION	MODEL DESCRIPTION	DATE	DATE PERIOD	Y	M	D	TIME PERIOD	REPLACEMENT	DATE
SAMPLE UNIVERSITY	BUDGET PROJECT	1977	1977						1977

what the computer does

CURRENT DATE
RUN 001

SAMPLE UNIVERSITY
BUDGET PROJECT

LINE	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
.....

The Plan Identification Input allows the user to describe his model, date it, and determine the column headings. With the optional Columnar Headings Input, the user can use alphabetic and numeric characters to head each column. The user can specify either a 6- or 12-column planning matrix.

MODEL SPECIFICATION KEYWORDS				
PERCENT	SUM	FILL	HEADING	
INCREASE	SHIFT	PROJECT	AVERAGE	
DECREASE	EQUATION	ACCUMULATIVE SUM	PLOT	
GOAL	MAXIMUM	ACCUMULATIVE PRODUCT	RETURN ON INVESTMENT	
DATA	MINIMUM	PUNCH		

The Model Specification input uses a set of "keywords" to specify the method of projecting each planning item. The list of "keywords" is shown above. Each keyword has a set of "reserved characters" to specify the magnitude and direction of change and other factors appropriate to each method.

METHODS OF PROJECTION

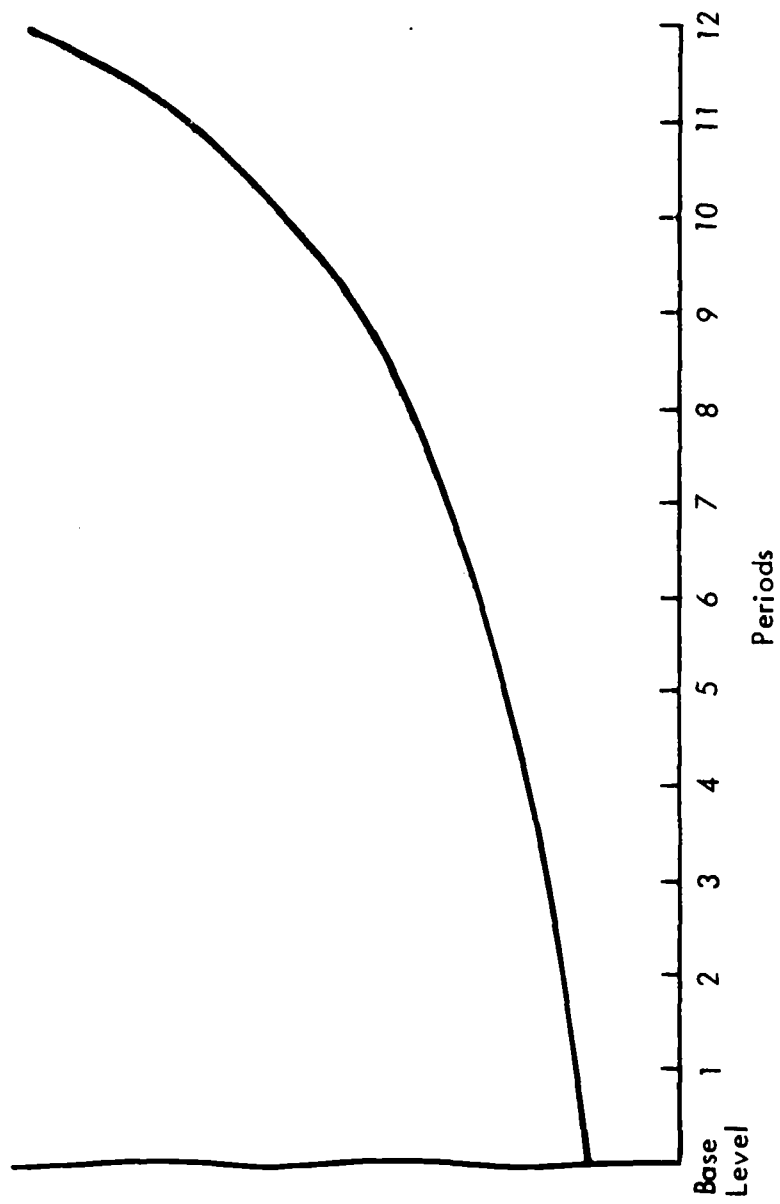
Independent

Dependent

INDEPENDENT METHODS OF PROJECTION

<u>Method</u>	<u>Keyword</u>
Change By a Percentage	PERCENT
Change By an Increment	INCREASE DECREASE
Change To Achieve a Goal	GOAL
User Supplied Data	DATA

CHANGE BY A PERCENTAGE



CHANGE BY A PERCENTAGE

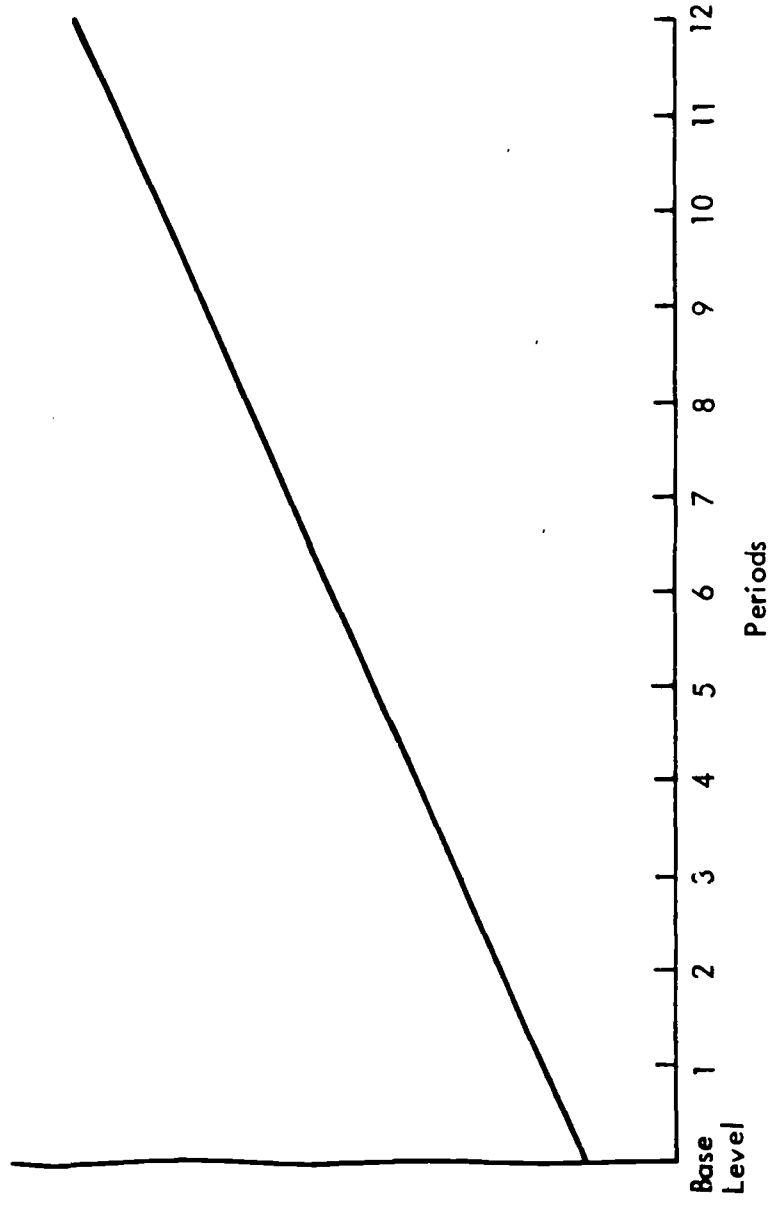
what you do

LINE NO.	PLANNING ITEM	BASE LEVEL	PERCENT INCREASE OF 6 PERCENT PER PERIOD
30	AVE SALARY UNDERGRAD FAC	12399.	

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
30	AVE SALARY UNDERGRAD FAC	13132.34	13420.24	14755.50	15640.83	16579.28	17574.03	18629.46	19746.18	20930.95	22185.81	23518.12	24929.1

CHANGE BY AN INCREMENT



CHANGE BY AN INCREMENT

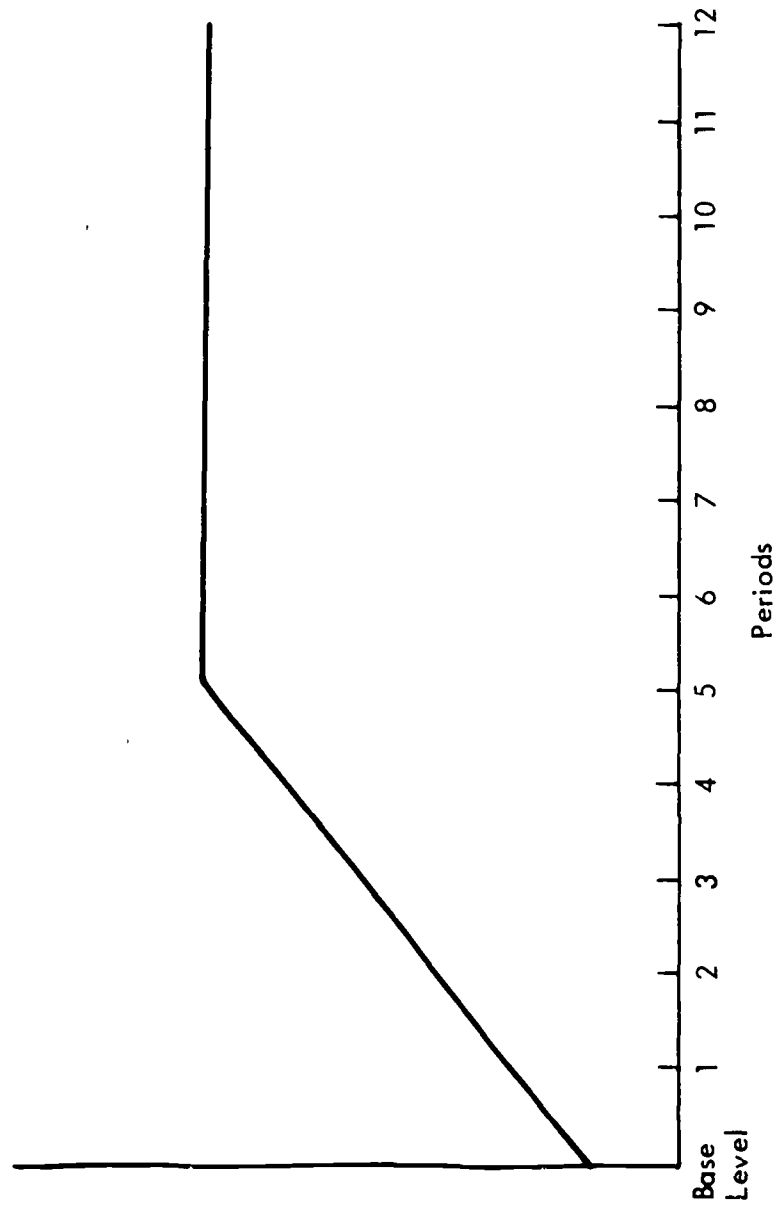
what you do

LINE NO	PLANNING ITEM	BASE LEVEL	FREEDOM METHOD OF COMPUTATION
1	30 FEES INSTATE UNDER 68AD	20.00	40.00
			INCREASE BY 20 PER PERIOD

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
20	FEES INSTATE UNDERGRAD	425.00	445.00	465.00	485.00	505.00	525.00	545.00	565.00	585.00	605.00	625.00	645.00

CHANGE TO ACHIEVE A GOAL



CHANGE TO ACHIEVE A GOAL

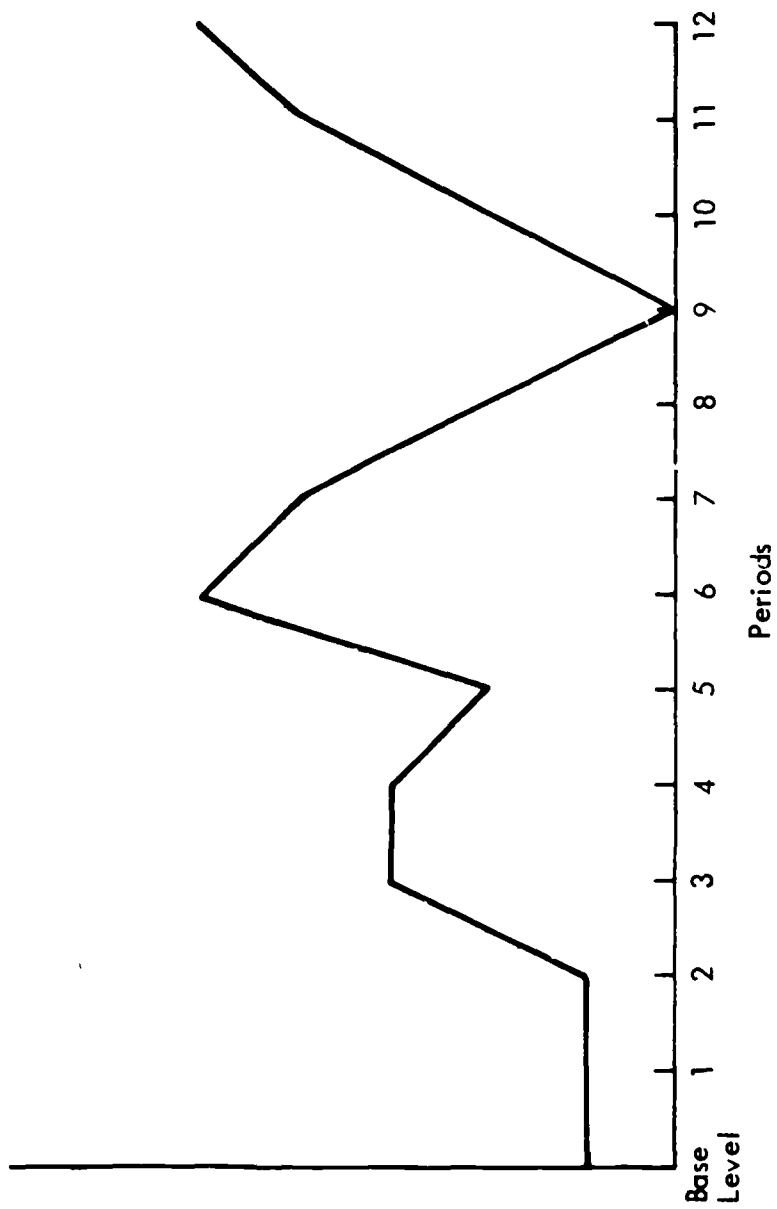
what you do

LINE NO	PLANNING ITEM	BASE LEVEL	FREEFORM - MOD OF COMPUTATION
40	SPONSORED RESEARCH	800900.	GOAL OF 500000 IN 3RD PERIOD

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
40	SPONSORED RESEARCH	700600.00	600300.00	500000.00	500000.00	500000.00	500000.00	500000.00	500000.00	500000.00	500000.00	500000.00	500000.00

USER SUPPLIED DATA



USER SUPPLIED DATA

what you do

LINE NO.	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION	93
3	NO BIRTHS 18 YRS AGO	28 15	DATA 92309, 94600, 95776, 98142, 98687, C	
			98548, 98748, 98201, 97575, 96865, C	
			94821, 92474	

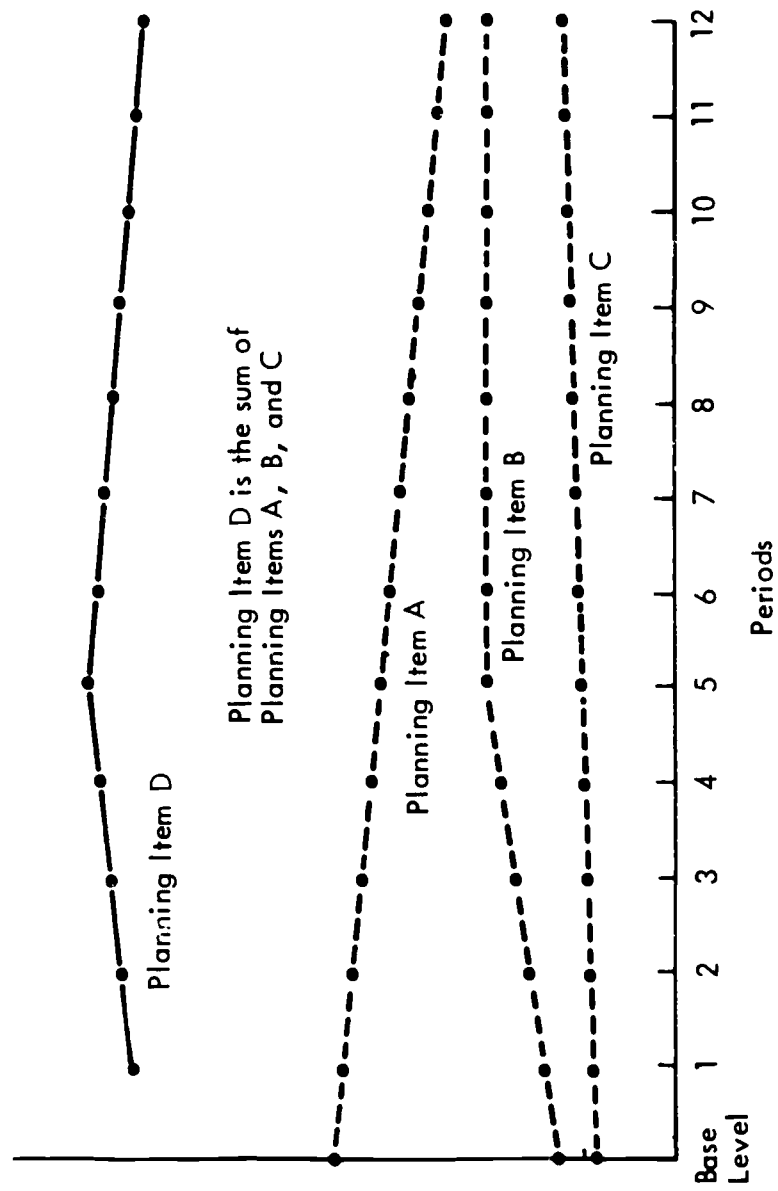
what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
3	NO BIRTHS 18 YRS AGO	92309.00	94600.00	95776.00	98142.00	98687.00	98548.00	98748.00	98201.00	97575.00	96865.00	94821.00	92474.00

DEPENDENT METHODS OF PROJECTION

<u>Method</u>	<u>Keyword</u>	<u>Method</u>	<u>Keyword</u>
Summation of Other Planning Items	SUM	Project Another Planning Item	PROJECT
Shift, or Shifted Function of Another Planning Item	SHIFT	Accumulative Sum of Another Planning Item	ACCUMULATIVE SUM
		Accumulative Product of Another Planning Item	ACCUMULATIVE PRODUCT
Function of Other Planning Items	EQUATION	Punch Cards of Other Planning Items	PUNCH
Maximum, or Minimum, of Other Planning Items	MAXIMUM MINIMUM	Average of Another Planning Item	AVERAGE
Fill Another Planning Item	FILL	Printed Plot of Other Planning Items	PLOT
		Return on Investment of Another Planning Item	RETURN

SUMMATION OF OTHER PLANNING ITEMS



Planning Item D is the sum of Planning Items A, B, and C

SUMMATION OF OTHER PLANNING ITEMS

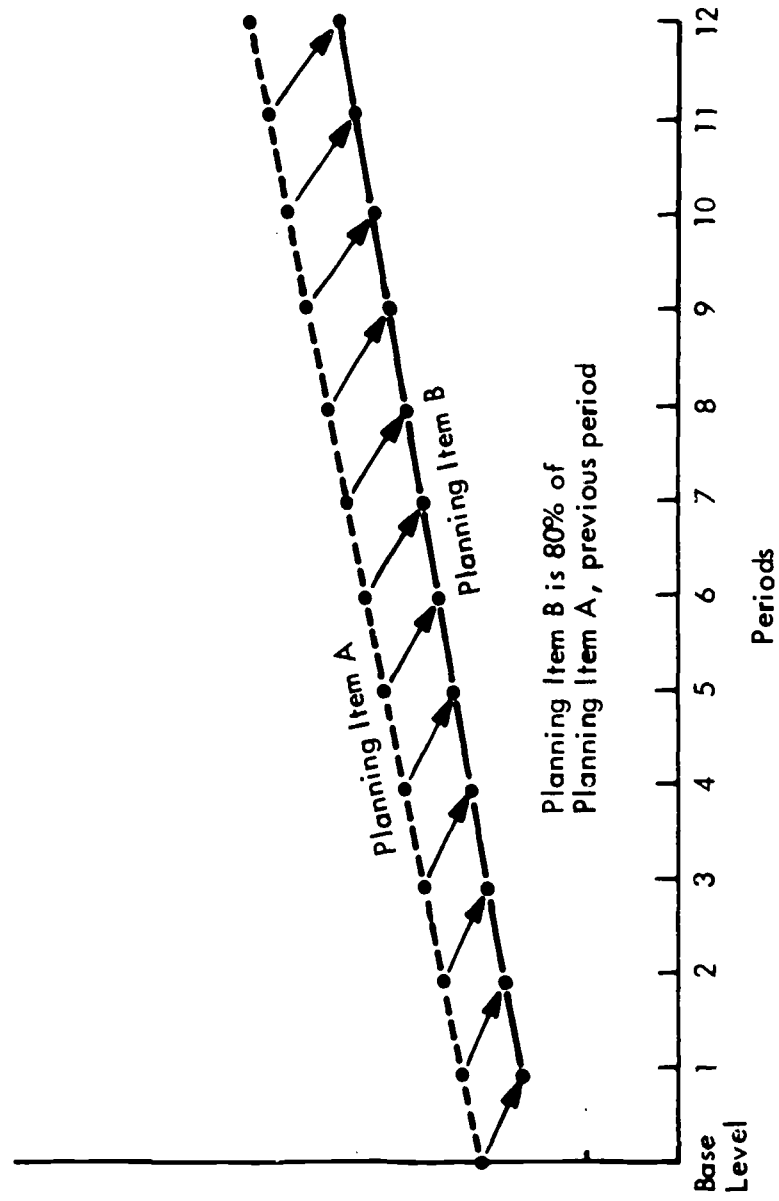
what you do

LINE NO.	PLANNING ITEM	BASE LEVEL	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
48	INSTRUCTION/DEPT RESEAR	40	SUM OF LINES 51, 52, 53											

what the computer does

48	INSTRUCTION/DEPT RESEAR	25148428	27666239	30527890	34189903	38349212	42812115	47692293	52905026	58537102	64666845	71113507	77571303
51	FAC SALARIES TOTAL	16995136	18836953	20938676	23559027	26497406	29642963	33040375	36741404	40689411	44980990	49484960	54155536
52	SUPPORT STAFF	7253292	7929286	8689214	9676876	10840566	12097238	13475689	14959219	16571024	18332688	20204144	22195296
53	SUPPORT NON-STAFF	900000	900000	900000	954000	1011740	1071914	1136224	1204403	1276667	1353267	1434663	1525531

SHIFTED FUNCTION OF ANOTHER PLANNING ITEM



SHIFTED FUNCTION OF ANOTHER PLANNING ITEM

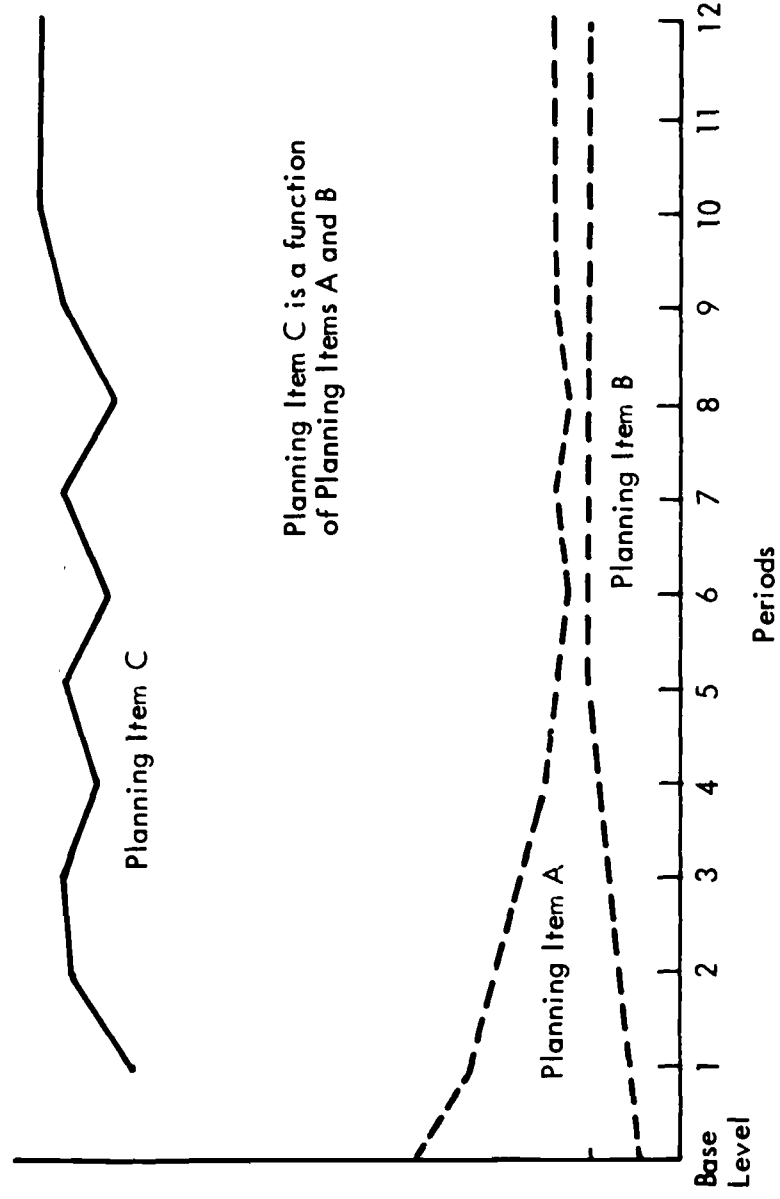
what you do

LINE NO.	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
8	SOPHOMORES	3240	SHIFT .80 LINE 7

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
8	SOPHOMORES	3456.80	3954.51	4255.29	4557.59	4929.86	5222.51	5484.19	5769.05	6013.43	6253.77	6488.98	6630.81
7	FRESHMEN	4943.14	5319.11	5696.99	6162.33	6528.14	6855.23	7211.31	7516.79	7817.21	8111.22	8288.53	8428.07

FUNCTION OF OTHER PLANNING ITEMS



FUNCTION OF OTHER PLANNING ITEMS

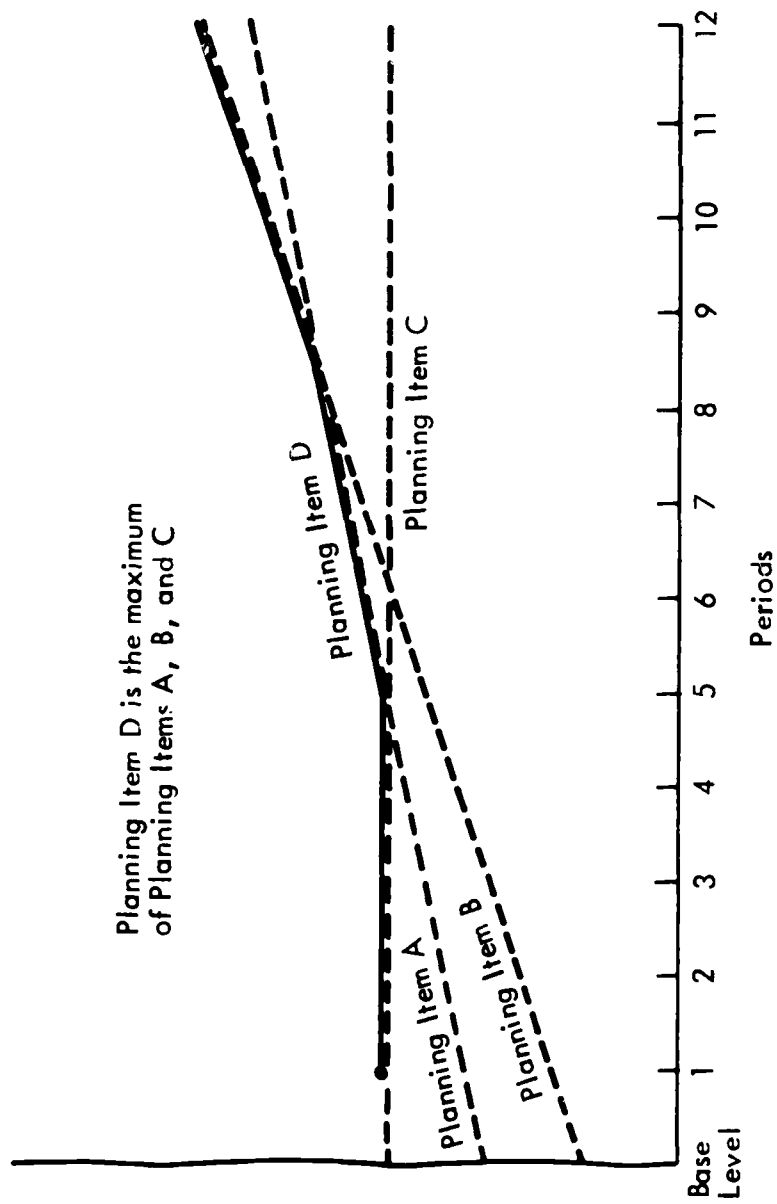
what you do

LINE NO	PLANNING ITEM	BASE LEVEL	PERFORM METHOD OF COMPUTATION
34	INSTATE	2078	100% COM L 11 * L20 + L14 * L22

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
34	INSTATE	6113696	6856564	7691653	8664638	9554906	10449863	11379651	12300068	13229592	14181157	15076036	15911770
11	TOTAL INSTATE UNDER GRAD	12116.94	13097.30	14191.66	15408.53	16490.41	17496.76	18491.13	19396.50	20253.53	21088.33	21777.02	22329.32
20	FEES INSTATE UNDERGRAD	425.00	445.00	465.00	485.00	505.00	525.00	545.00	565.00	585.00	605.00	625.00	645.00
14	INSTATE GRADUATE	1928.00	1928.00	1928.00	1985.84	2045.42	2106.78	2169.98	2235.08	2302.13	2371.20	2442.33	2515.60
22	FEES INSTATE GRADUATE	500.00	533.33	566.67	600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00

MAXIMUM (MINIMUM) OF OTHER PLANNING ITEMS



MAXIMUM (MINIMUM) OF OTHER PLANNING ITEMS

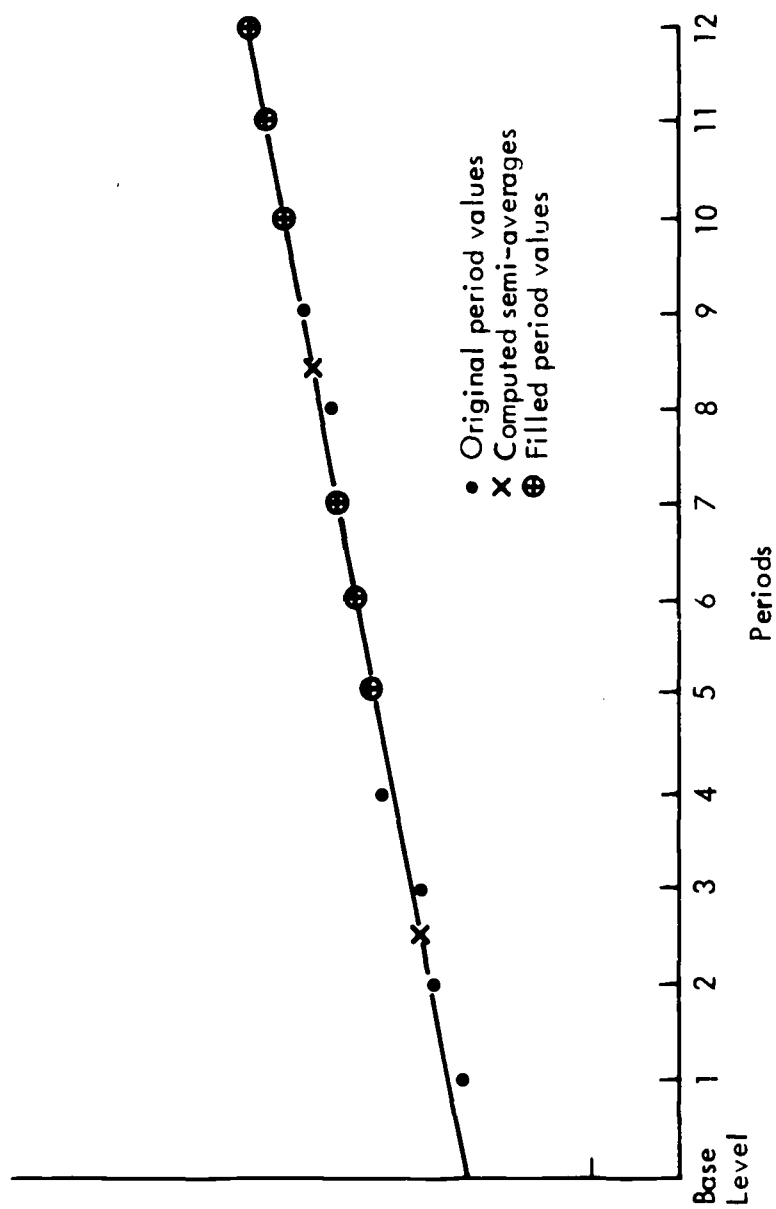
what you do

LINE NO.	PLANNING ITEM	BASE LEVEL	PERFORM METHOD OF COMPUTATION	80
96	IDEAL AVE UNDERG FEE	20.00	MAXIMUM OF L94, L95	

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
96	IDEAL AVE UNDERG FEE	519.44	545.65	605.84	599.58	627.36	655.72	689.31	743.57	810.27	889.34	967.14	1105.29
95	BALANCED BUDGET UNDG FEE	440.50	532.31	605.84	596.00	616.42	648.12	689.31	743.57	810.27	889.34	967.14	1105.29
94	AVE UNDERGRAD FEE	519.44	545.65	572.36	599.58	627.36	655.72	684.70	714.34	744.68	775.76	807.62	840.31

FILL ANOTHER PLANNING ITEM (Estimated by a modified linear regression technique)



FILL ANOTHER PLANNING ITEM

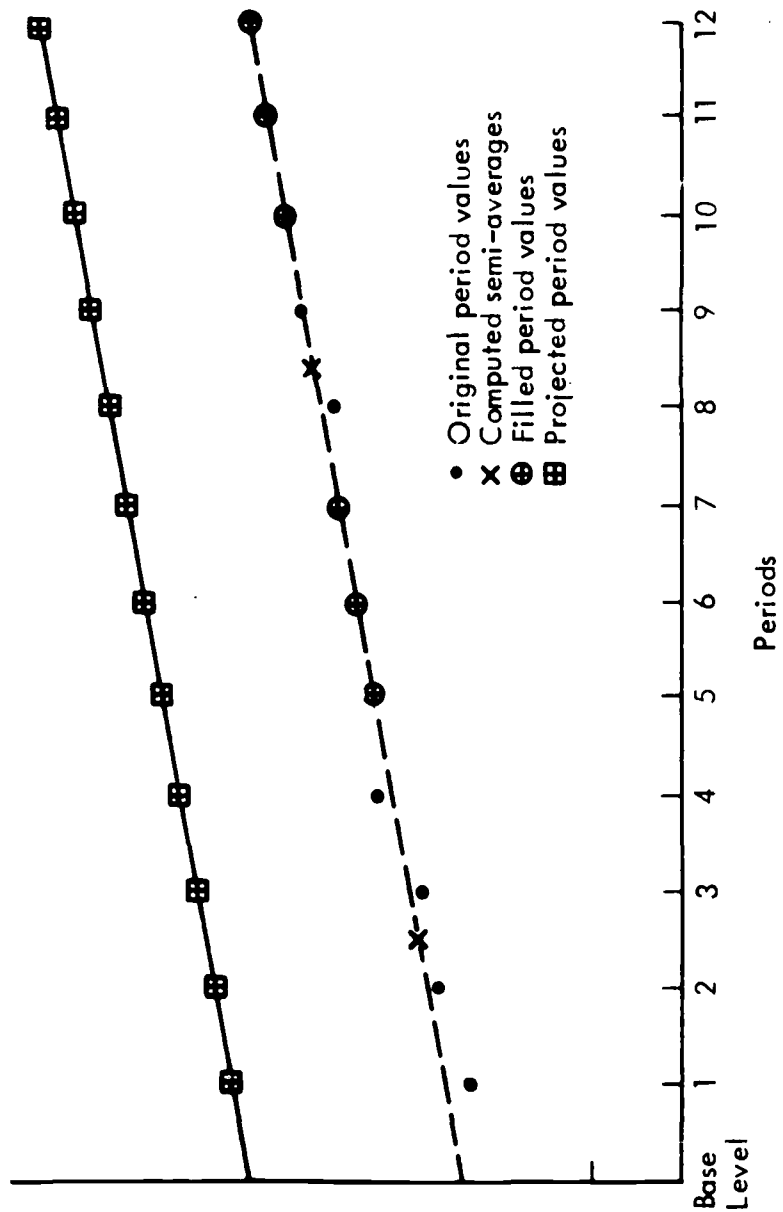
what you do

LINE NO.	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF PLANNING
92	SAMPLE'S SHARE 1960-1971		DATA 4.5, 4.5, 5.3, 0.6, 7, 6.3, 7.7, 0.6, 6, 6, 9, 9.3, 9.5
6	SAMPLES SHARE 1960-1971		FILL LINE 92
5	SAMPLE'S SHARE		PROJECT LINE 6

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
92	SAMPLE'S SHARE 1960-1971	4.50	4.50	5.30	0.0	6.70	6.30	7.70	0.0	8.60	9.00	9.30	9.70
6	SAMPLES SHARE 1960-1971	4.50	4.50	5.30	5.77	6.70	6.30	7.70	7.57	8.60	9.00	9.30	9.70
5	SAMPLE'S SHARE	10.50	11.02	11.55	12.07	12.60	13.12	13.65	14.17	14.70	15.22	15.75	16.27

PROJECT ANOTHER PLANNING ITEM



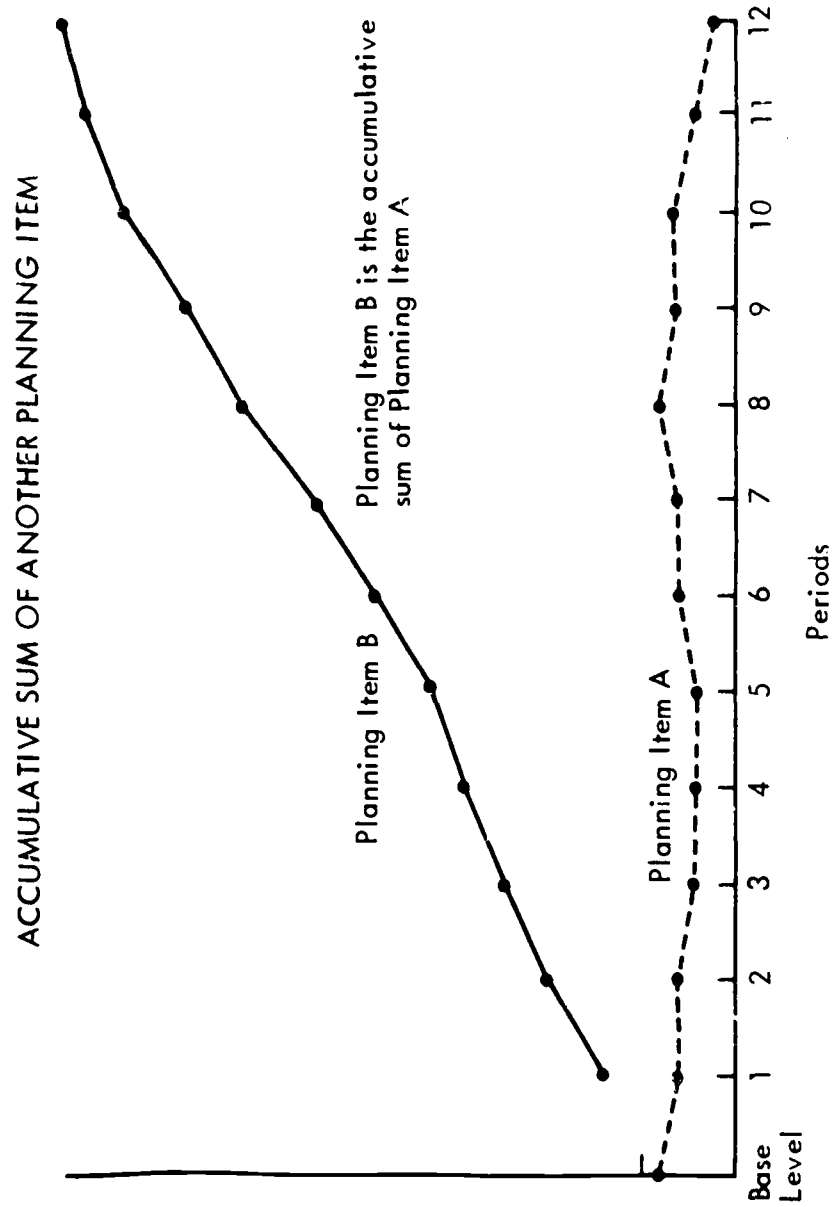
PROJECT ANOTHER PLANNING ITEM

what you do

LINE NO.	PLANNING ITEM	BASE LEVEL	PERFORM METHOD OF COMPUTATION
92	SAMPLE'S SHARE 1960-1971	28	DATA 4.5, 4.5, 5.3, 0.6, 7, 6.3, 7.7, 0.8, 6, C
6	SAMPLE'S SHARE 1960-1971	29	9.9, 3, 9.5
5	SAMPLE'S SHARE		FILL LINE 92
			PROJECT LINE 6

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
92	SAMPLE'S SHARE 1960-1971	4.50	4.50	5.30	0.0	6.70	6.30	7.70	0.0	8.60	9.00	9.30	4.50
6	SAMPLE'S SHARE 1960-1971	4.50	4.50	5.30	5.77	6.70	6.30	7.70	7.87	8.60	9.00	9.30	4.50
5	SAMPLE'S SHARE	10.50	11.02	11.55	12.07	12.60	13.12	13.65	14.17	14.70	15.22	15.75	16.27



ACCUMULATIVE SUM OF ANOTHER PLANNING ITEM

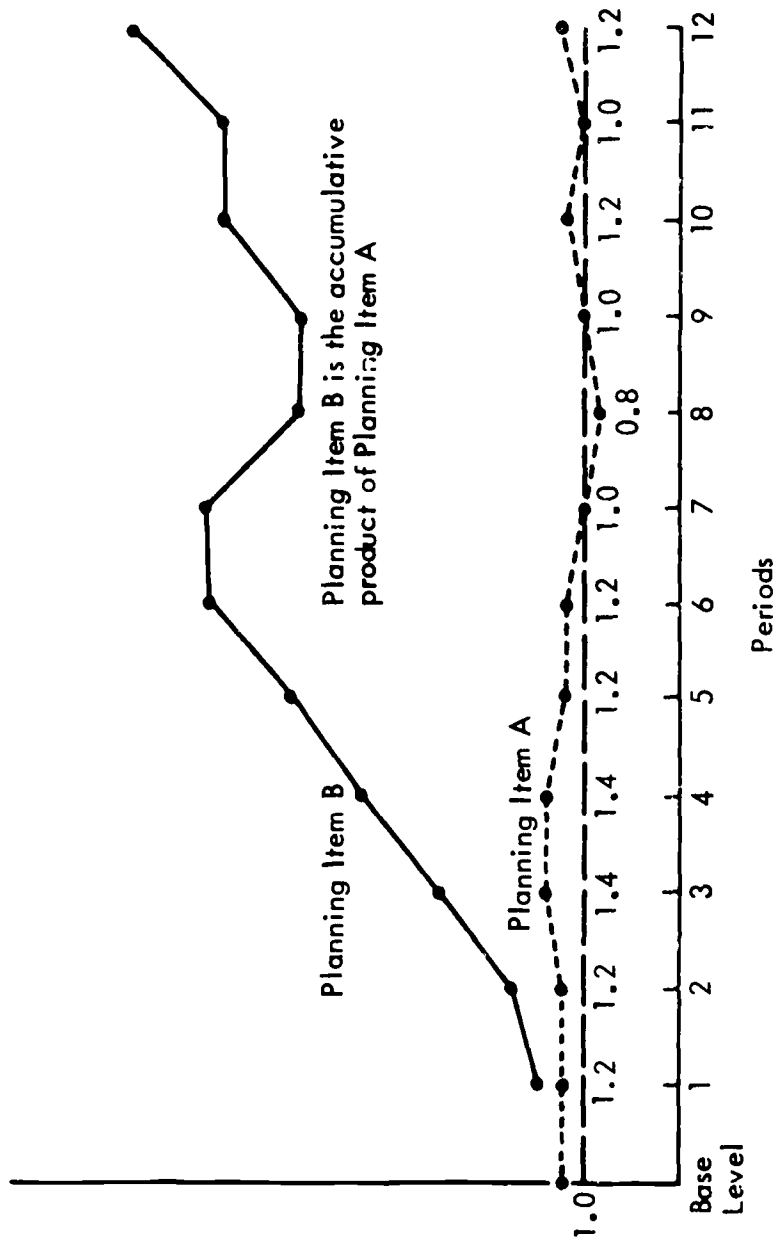
what you do

LINE NO.	PLANNING ITEM	BASE LEVEL	PERFORM METHOD OF COMPUTATION
66	ACCUM SURPLUS/DEFICIT	10 41	ACCUMULATE THE SUM OF LINE 65

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
66	ACCUM SURPLUS/DEFICIT	1061744	1255744	728208	789488	989728	1137392	1042720	413408	-1061200	-3719968	-8059408	-14627168
65	SURPLUS/DEFICIT	1061744	194000	-527536	61280	200240	147664	-94672	-629312	-1474608	-2658768	-4339440	-6567760

ACCUMULATIVE PRODUCT OF ANOTHER PLANNING ITEM



ACCUMULATIVE PRODUCT OF ANOTHER PLANNING ITEM

what you do

LINE NO.	PLANNING ITEM	BASE LEVEL	PREFORM METHOD OF COMPUTATION
100	COMPOUND CHANGE	20.75	43153 ACCUMULATE THE PRODUCT OF LINE 101

what the computer does

.....	LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
100	COMPOUND CHANGE	1.04	1.10	1.14	1.17	1.25	1.28	1.31	1.37	1.38	1.49	1.66	1.67		
101	WORK	1.04	1.06	1.03	1.03	1.07	1.02	1.03	1.04	1.01	1.08	1.11	1.01		

PUNCH CARD OF OTHER PLANNING ITEMS

what you do

LINE NO	PARTIAL ITEM	BASE LEVEL	PREFORM METHOD OF COMPUTATION
97		20	40
		28	65
			PUNCH LINE

what the computer does

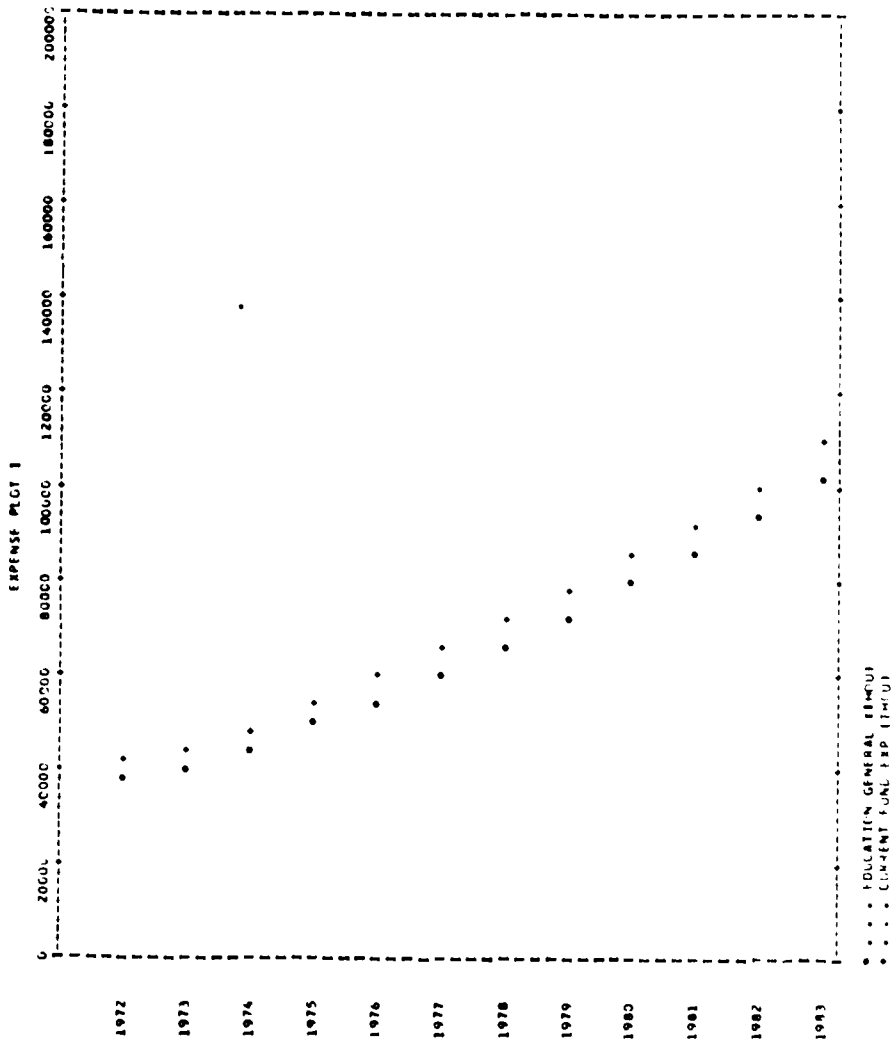
[illegible]

PRINTER PLOT OF OTHER PLANNING ITEMS

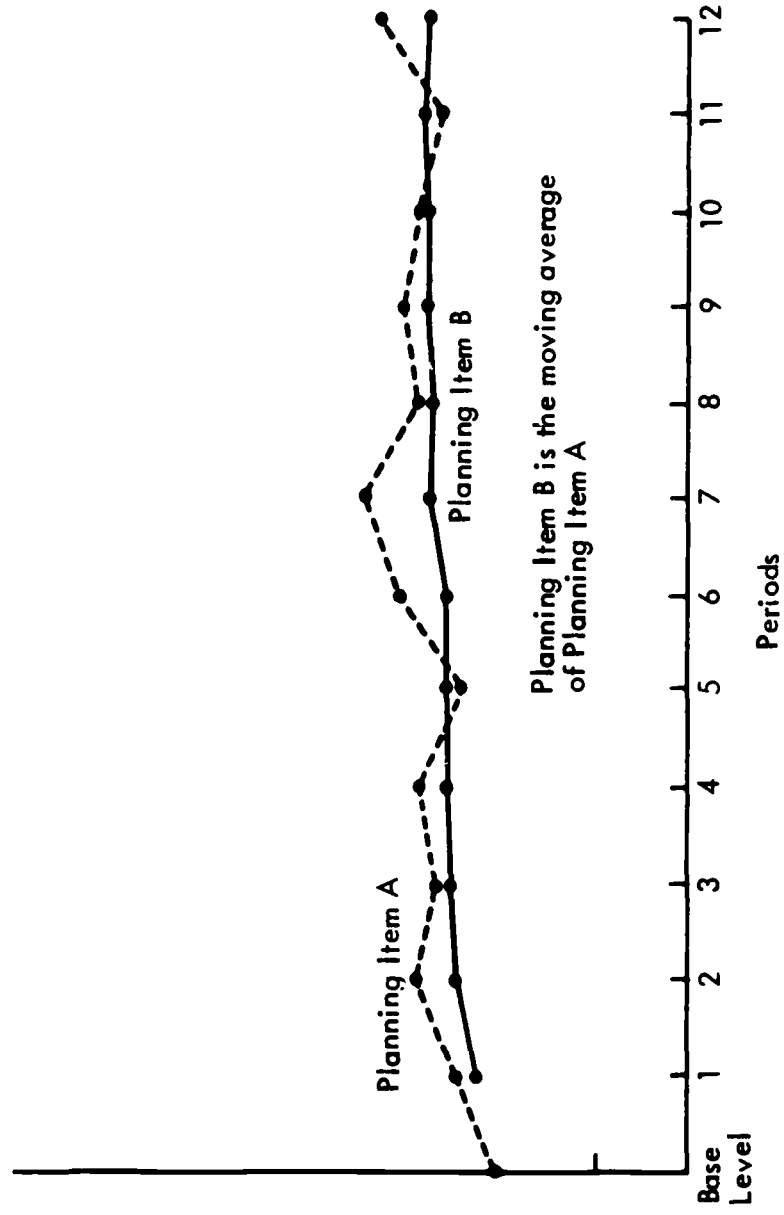
what you do

LINE NO.	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
69	EXPENSE PLOT I	20	44145
PLOT LINE 74, 77			

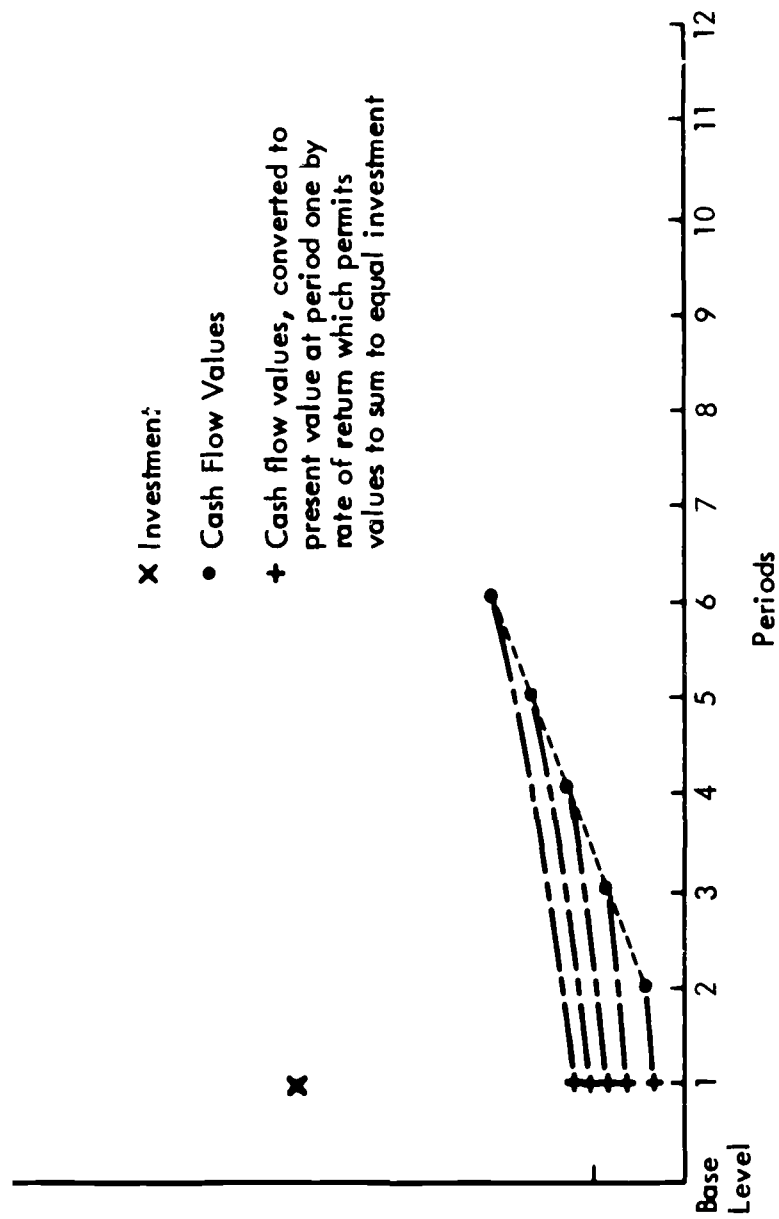
what the computer does



AVERAGE OF ANOTHER PLANNING ITEM



RETURN ON INVESTMENT OF ANOTHER PLANNING ITEM



what you do

LINE NO	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
45	181 AFTER TAX DISC YIELD	20	40 61 84 45 RETURN OVER 12 PERIODS L173 BEGIN 1ST

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
141	AFTER TAX DISC YIELD	3.36	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
173	PROFIT	-1710004	46953	148525	188807	195649	203199	211027	219099	227377	186396	244383	253015

HEADINGS OR SECTION TITLES

what you do

LINE NO	PLANNING ITEM	BASE LEVEL	ENROLLMENT METHOD OF COMPUTATION
1	1 UNDERGRAD FTE ENROLLMENT	20 25	40 41 42 43 HEADING

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
.....

UNDERGRAD FTE ENROLLMENT

A planner can use section titles or headings to divide his model into logical sections.

SUMMARY REPORTS

what you do

REPORT TITLE		FREEFORM REPORT LINES										
SURPLUS/DEFICIT		65	66	87	88	99						

what the computer does

SURPLUS/DEFICIT

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
65	SURPLUS/DEFICIT	1061744	194000	-527536	61280	200240	147664	-94672	-629312	-1474608	-2658768	-4339440	-6567760
66	ACCUM SURPLUS/DEFICIT	1061744	1255744	729208	789488	989728	1137392	1042720	413408	-1061200	-3719968	-8059408	-14627168
87	SUR/DEF PER UNDERGRAD	78.94	13.34	-33.49	3.58	10.94	7.60	-4.61	-29.23	-65.59	-113.58	-179.52	-264.98
88	SUR/DEF PER STUDENT	67.08	11.50	-29.26	3.16	9.70	6.76	-4.12	-26.15	-58.79	-101.95	-161.23	-237.95
99	AVE SURPLUS/DEFICIT	1061744	627872	242736	197372	197946	169565	148960	51676	-117911	-371997	-732673	-1214431

The Summary Report input format allows the user to design his own printed reports. Each report is specified by designating the title and the line numbers of the planning items to be included. The user has complete flexibility in the number of planning items and their sequence.

PLANTRAN APPLICATIONS

Enrollment projections	Analysis of vocational-technical programs	Library planning
Unit cost analysis	Tax fund analysis	Induced Course Load Matrix
Faculty analysis	Support for short-term bank loan	Endowment fund analysis
Space utilization	Support for funding requests	Short term budgeting
Space needs projection	Impact of off-campus, independent study programs	Athletic program planning
Long range budget projection	Analytical reports for external agencies	Development and fund-raising forecasts
Institutional financial analysis	Tuition/fee determination	Bookstore operation
Departmental analysis	Medical school planning	Food service cost analysis
Resource requirement for new program/department	Student recruitment planning	Student financial aid planning
Salary policy analysis	Staff training	Maintenance and operations cost analysis
Teaching load determination		Continuing education program planning

Since PLANTRAN II is a flexible tool rather than a specific model, it has been used to address a wide variety of planning and analysis problems. Above is a list of some of the applications of PLANTRAN. These projects were undertaken without adding campus staff or using outside consultants. PLANTRAN II provided the medium for current staff to use the computer to address these concerns.

EDUCATIONAL ORGANIZATIONS

with access

to

PLANTRAN

PRIVATE COLLEGES

Avila College	Missouri Valley College
Baker University	Ottawa University
Benedictine College	Park College
Donnelly College	Rockhurst College
Graceland College	St. Mary College
Grinnell College	Simpson College
Ithaca College	Tarkio College
Kansas City Art Institute	Westmar College
Marycrest College	William Jewell College

PUBLIC UNIVERSITIES

Sixteen Senior Public Institutions in North Carolina

Iowa State University

University of Missouri-Kansas City

McMaster University (Canada)

University of Kentucky

PUBLIC COMMUNITY COLLEGES

Des Moines Area Community College

Iowa Western Community College

Johnson County Community College

Kansas City, Kansas Community College

Kirkwood Community College

**Metropolitan Junior College District of Kansas City,
Missouri**

Prairie State College

PRIVATE UNIVERSITIES

The American University

University of Denver

Cornell University

Drake University

Duquesne University

Marquette University

Rensselaer Polytechnic Institute

St. Louis University

OTHER

Kansas City Regional Council for Higher Education

North Carolina Board of Higher Education

The following individuals have experience using PLANTRAN to address problems of educational administration.

Mr. Elmer Carriker Special Assistant to the President Baker University Baldwin, Kansas (913) 594-6447	Dr. William Adrian Special Assistant to the Chancellor for Long Range Planning University of Denver Denver, Colorado (303) 753-1964	Mr. Arthur Ashton Coordinator for Planning and Management Systems American University Washington, D. C. (202) 696-2706
Dr. Peter Armacost President Ottawa University Ottawa, Kansas (913) 242-5200	Rev. Fred Clark Director of Institutional Research Duquesne University Pittsburgh, Pennsylvania (412) 434-6063	Dr. Harold Finch Dean of the Institute for Community College Development Johnson County Community College 57th and Merriam Drive Shawnee Mission, Kansas 66203 (913) 236-4500
Dr. Paul Givens Director of Institutional Research Ithaca College Ithaca, New York (607) 274-3113	Dr. Oliver C. Houston Assistant to the President Graceland College Lamoni, Iowa 50140 (515) 784-3311	Dr. Gerald Baltz Coordinator of Academic Research St. Louis University 221 North Grand Boulevard St. Louis, Missouri 63103 (314) 535-3300
Dr. E. C. Higbee Director Office of Institutional Research McMaster University Hamilton, Ontario, CANADA (416) 522-4971	Dr. Rogers P. Finch Vice President for Planning Rensselaer Polytechnic Institute Troy, New York (518) 270-6246	

Dr. Joseph Matar Associate Provost Marquette University 615 North Eleventh Street Milwaukee, Wisconsin 53233 (414) 224-7040	Mr. Jack Asby Assistant Superintendent for Administrative Services Des Moines Area Community College 2006 Ankeny Boulevard Ankeny, Iowa 50021 (515) 964-0651	Dr. William Sutterfield Vice President for Administration Huron College Huron, South Dakota (605) 352-8721
Dr. Robert Reiman Director of Institutional Research Appalachian State University Boone, North Carolina 28608 (704) 264-8871	Dr. Rhae Swisher Vice President for Finance Simpson College Indianola, Iowa 50125 (515) 961-6251	
Mr. Doug Little Director of Data Processing Drake University Des Moines, Iowa 50311 (515) 271-3184	Mr. Stanley Love Director of Administrative Services Kansas City Regional Council for Higher Education 4901 Main Street, Suite 320 Kansas City, Missouri 64112 (816) 561-6693	
Mr. Lowell Sisson Assistant to the Superintendent Kirkwood Community College 6301 Kirkwood Boulevard, S.W. Box 2068 Cedar Rapids, Iowa 52406 (319) 398-5486	Mr. Norman Kiadstrup Executive Director Higher Education Facilities Commission of the State of Iowa 201 Jewell Building 914 Grand Avenue Des Moines, Iowa 50309 (515) 281-3501	
Mr. John Esbin Associate Director of the Computer Center University of Iowa Iowa City, Iowa 52240 (319) 353-3366		

- *** Installation of the PLANTRAN II Software Package. This will either be on the university's own computer or a machine to which the institution has access. Source programs are provided.
- *** An Intensive 3-Day, On-campus Training Session. This covers instruction in the PLANTRAN II language as well as actual work on real institutional planning problems.
- *** Planning Workshop Series. The university may send staff members to this series held regularly in Kansas City. The workshops focus on specific techniques of institutional research and planning implemented in the PLANTRAN II System.
- *** PLANTRAN II User Group. There is an increasing amount of information and model exchange among the users of the system. Periodic user conferences are held in conjunction with major professional and association meetings.
- *** PLANTRAN II Techniques Manual. MRI publishes documentation of useful PLANTRAN II models as developed by users. This publication is a cumulative library of useful routines.
- *** Follow-up, On-Campus Visit. This visit is scheduled at the convenience of the university planners for implementing new software, providing special training, or giving advice on modeling techniques.
- *** Continuing Consultation. MRI provides general support to the university planners.

Midwest Research Institute had developed a planning service program organized around PLANTRAN II. Over 50 U.S. and Canadian colleges and universities are participating in the program. While the exact cost depends upon the type and extent of project activity, the services described above are available to individual institutions for a \$9,500 one-time fee.

Groups of institutions have acquired access to the planning system for substantially less than the individual institution fee. The exact cost for a multi-institution arrangement depends upon the number and type of machine installations, the amount of on-site training, and any additional activity requiring M&I staff involvement.

An exact cost estimate and description of specific services and activities will be described in a proposal issued by Midwest Research Institute at the request of an institution, group of institutions, or other appropriate entity.

PLANTRAN II

Technical Specifications

Computer Requirements:	IBM 360/30 or equivalent computer. 46K bytes core memory, direct access device. Version of PLANTRAN II has been developed for the CDC 6400, RCA Spectra 70/35, Burroughs 5500, and Honeywell 1200. Installation on machines other than these generally requires additional MRI staff effort and may affect the cost.
Source Language:	DOS COBOL D, FORTRAN IV OS COBOL G, FORTRAN F Compatible with ANSI
Maximum Model Size:	Approximately 4,000 planning items, i.e., a 4,000 x 12 matrix.

The following pages contain a brief example of a PLANTRAN II application. Since PLANTRAN II is not a specific model but rather a system for building models, this example is not the PLANTRAN II model, but rather just one of an unlimited number of models which can be constructed.

This example is a model of an instructional department. Its objective is to calculate the financial and personnel resources required by the projected student load. These requirements will be generated for the next 6 years.

Since this is meant to be an example of PLANTRAN II rather than of educational planning, straightforward techniques of projection and interrelation are used. The capacity (12 x 4000 matrix) and flexibility (18 methods of projection) make PLANTRAN II applicable to more complex analysis in both large and small institutional settings.

NAME _____ PLANTAN II DATA SHEET
IDENTIFICATION

PAGE 1 OF 2 MRI

ORGANIZATION	MODEL DESCRIPTION	DATE	BASE PERIOD	T	M	R	PERIOD 1	PERIOD 2	PERIOD 3	PERIOD 4	PERIOD 5	PERIOD 6	PERIOD 7	PERIOD 8	PERIOD 9	PERIOD 10	PERIOD 11	PERIOD 12	RUN NO
ANY UNIVERSITY	DEPARTMENTAL	1972	56	57	60	61	63	65											78
																			80

MODEL SPECIFICATION

LINE NO	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION	80
1	WEEKLY STUDENT CONT MRS	7250	DATA 7270, 7280, 7295, 7300, 7290, 7275	
2	AVERAGE SECTION SIZE	35	INCREASE 1 BEGINNING IN 3RD YEAR	
3	SAVE FACULTY TCH LD (US\$)	9.2	PERCENT DECREASE OF .5 BEGIN IN 5TH YEAR	
4	FTE FACULTY REQUIRED	22.5	EQUATION: $L1/(L2 \times L3)$	
5	5PCT RANKED FACULTY	70	INCREASE .5 PER YEAR	
6	6PCT TEACHING ASSISTANTS	30	EQUATION: $100 - L5$	
7	7FTE RANKED FACULTY	15.75	EQUATION: $L4 \times .0115$	
8	8 TEACHING ASSISTANTS	10	EQUATION: $L4 \times .0116 / .67$	
9	9 AVERAGE FACULTY SALARY	15650	PERCENT INCREASE OF 2.5 PER YEAR	
10	10 AVERAGE TCH ASSIST SAL	4800	INCREASE 200 PER YEAR	
11	11 FACULTY SALARIES	246488	EQUATION: $L7 \times L9$	
12	12 TCH ASSISTANT SALARIES	48000	EQUATION: $L8 \times L10$	
13	13 SUPPORT STAFF	7.2	EQUATION: $2 \times .33 L7$	
14	14 AVE SUPPORT STAFF SALARY	5000	PERCENT INCREASE 2.5 PER YEAR	
15	15 SUPPORT STAFF SALARIES	36000	EQUATION: $L13 \times L14$	
16	16 TOTAL SALARIES	330487	SUM OF LINES 11, 12, 15	
17	17 SUPPORT BUDGET PER FAC	520	INCREASE 50 BEGINNING IN 5TH PERIOD	
18	18 SUPPORT BUDGET	8190	EQUATION: $L7 \times L17$	

SUMMARY REPORTS

REPORT TITLE	FREEFORM REPORT LINES	80
	24 25	

ORGANIZATION	MODEL DESCRIPTION	DATE	BASE P. L.	W	R	P. N. N.
1	24 25	40 41	55 57	62 61	63	79 9
						T-TIME PERIOD H-HEADING R-REPLACEMENT

COLUMNAR HEADINGS - OPTIONAL

	PERIOD 1	PERIOD 2	PERIOD 3	PERIOD 4	PERIOD 5	PERIOD 6	PERIOD 7	PERIOD 8	PERIOD 9	PERIOD 10	PERIOD 11	PERIOD 12
1	67	1213	1819	2425	3031	3637	4243	4849	5455	6061	6667	72

MODEL SPECIFICATION

LINE NO	PLANNING ITEM	BASE LEVEL	FREIFORM METHOD OF COMPUTATION
19	DIRECT EXPENSE	338677	EQUATION: L16 + L18
20	INDIRECT COSTS	161641	EQUATION: .4891 L16
21	TOTAL DEPT EXPENSE	500318	SUM OF LINES 19, 20
22	TOTAL EXPENSE PER W/SCH	34.50	EQUATION: L21 / 241
23	WORK		SHIFT LINE 22
24	PCT CHG IN EXP/W/SCH		EQUATION: (L22 - L23) / L23 * 100
25	AVE PCT CHG IN EXP/W/SCH		AVERAGE OF LINE 24
26	DEPARTMENTAL PLOT I		PLOT 11, 12, 15, 18
27	DEPARTMENTAL PLOT II		PLOT 22, 7, 8
28			

SUMMARY REPORTS

REPORT TITLE	REPORT LINES
STAFF REQUIREMENTS	4, 7, 8, 13
BUDGET REQUIREMENTS	11, 12, 15, 16, 28, 18, 28, 19, 28, 20, 28, 21
ANALYSIS	2, 3, 9, 5, 6, 17, 22, 24, 25

ANY UNIVERSITY
DEPARTMENTAL
RUN

ANALYSIS OF MATRIX
FOR A
6 PERIOD FORECAST

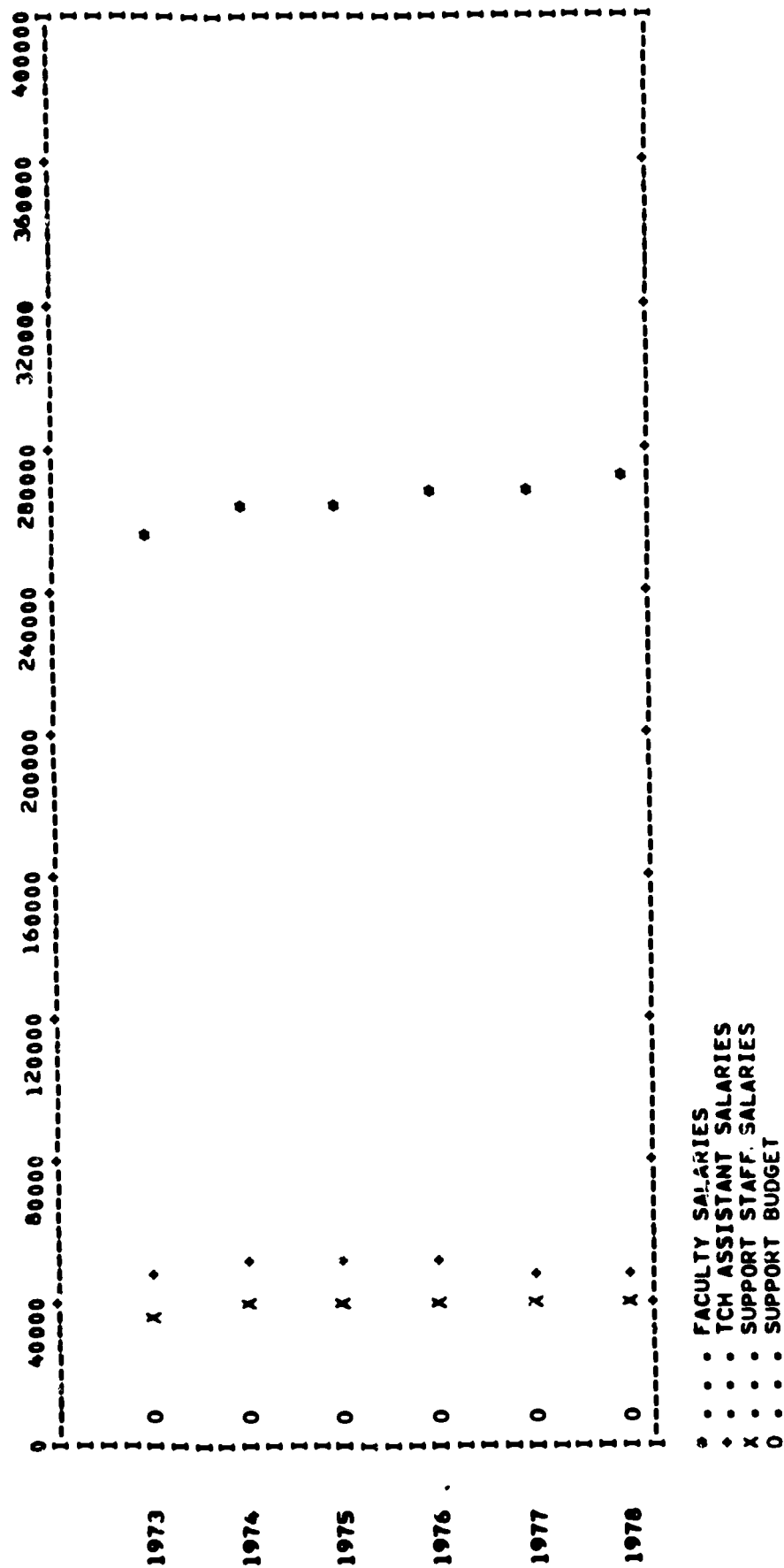
CURRENT DATE
BASE YR. 1972

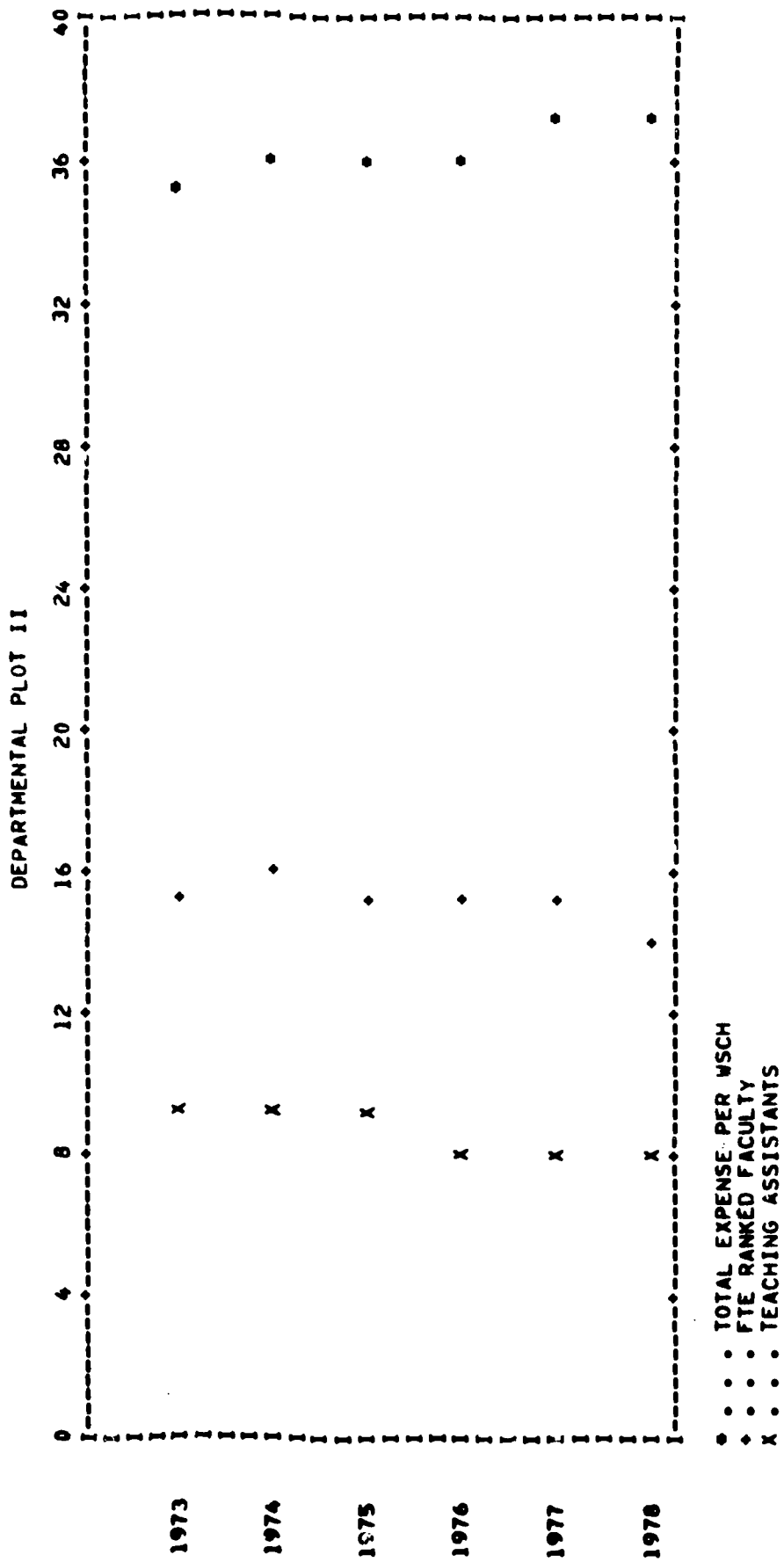
LINE	DESCRIPTION	BASE	METHOD OF COMPUTATION
1	WEEKLY STUDENT CONT HRS	7250	DATA 7270, 7280, 7295, 7300, 7290, 7275
2	AVERAGE SECTION SIZE	35	INCREASE 1 BEGINNING IN 3RD YEAR
3	AVE FACULTY TCH LD (WSCH)	9.2	PERCENT DECREASE OF .5 BEGIN IN 5TH YEAR
4	FTE FACULTY REQUIRED	22.5	EQUATION: $L1 / (L2 * L3)$
9	AVERAGE FACULTY SALARY	15650	PERCENT INCREASE OF 2.5 PER YEAR
5	PCT RANKED FACULTY	70	INCREASE .5 PER YEAR
6	PCT TEACHING ASSISTANTS	30	EQUATION: $100 - L5$
7	FTE RANKED FACULTY	15.75	EQUATION: $L4 * .01 L5$
8	TEACHING ASSISTANTS	10	EQUATION: $L4 * .01 L6 / .67$
10	AVERAGE TCH ASSIST SAL	4800	INCREASE 200 PER YEAR
11	FACULTY SALARIES	246488	EQUATION: $L7 * L9$
12	TCH ASSISTANT SALARIES	48000	EQUATION: $L8 * L10$
13	SUPPORT STAFF	7.2	EQUATION: $2 * .33 L7$
14	AVE SUPPORT STAFF SALARY	5000	PERCENT INCREASE 2.5 PER YEAR
15	SUPPORT STAFF SALARIES	36000	EQUATION: $L13 * L14$
16	TOTAL SALARIES	330487	SUM OF LINES 11, 12, 15
17	SUPPORT BUDGET PER FAC	520	INCREASE 50 BEGINNING IN 5TH PERIOD
18	SUPPORT BUDGET	8190	EQUATION: $L7 * L17$
19	DIRECT EXPENSE	338677	EQUATION: $L16 * L18$

ANY UNIVERSITY DEPARTMENTAL RUN		ANALYSIS OF MATRIX FOR A 6 PERIOD FORECAST		CURRENT DATE BASE YR. 1972
LINE	DESCRIPTION	BASE	METHOD OF COMPUTATION	
20	INDIRECT COSTS	161641	EQUATION: .4891 L16	
21	TOTAL DEPT EXPENSE	500318	SUM OF LINES 19,20	
22	TOTAL EXPENSE PER WSCH	34.50	EQUATION: L21 / 2L1	
23	WORK		SHIFT LINE 22	
24	PCT CHG IN EXP/WSCH		EQUATION: (L22-L23)/L23 * 100	
25	AVE PCT CHG IN EXP/WSCH		AVERAGE OF LINE 24	
26	DEPARTMENTAL PLOT I		PLOT 11,12,15,18	
27	DEPARTMENTAL PLOT II		PLOT 22,7,8	
28				

THE FOLLOWING REPORTS ARE REQUESTED
STAFF REQUIREMENTS 4,7,8,13
BUDGET REQUIREMENTS 14,12,15,16,28,18,28,19,28,20,28,21
ANALYSIS 2,3,9,5,6,17,22,24,25

DEPARTMENTAL PLOT I





ANY UNIVERSITY DEPARTMENTAL		STAFF REQUIREMENTS					CURRENT DATE RUP.
LINE NO.	PLANNING ITEM	1973	1974	1975	1976	1977	1978
4	FTE FACULTY REQUIRED	22.58	22.81	22.03	21.45	20.96	20.48
7	FTE RANKED FACULTY	15.92	16.05	15.75	15.44	15.19	14.95
8	TEACHING ASSISTANTS	9.94	9.74	9.37	8.96	8.60	8.25
13	SUPPORT STAFF	7.25	7.30	7.20	7.10	7.01	6.93

ANY UNIVERSITY DEPARTMENTAL		BUDGET REQUIREMENTS					CURRENT DATE F.Y.
LINE NO.	PLANNING ITEM	1973	1974	1975	1976	1977	1978
11	FACULTY SALARIES	255332.31	263934.19	265415.63	266732.13	269032.44	271341.44
12	TCH ASSISTANT SALARIES	49704.51	50886.44	50593.93	50188.52	49890.63	49519.29
15	SUPPORT STAFF SALARIES	37170.00	38333.16	38752.00	39160.04	39678.51	40204.70
16	TOTAL SALARIES	342206.82	353153.78	354761.55	356080.68	358601.57	361064.43
28							
18	SUPPORT BUDGET	8276.96	8347.13	8189.25	8029.14	8660.56	9269.34
28							
19	DIRECT EXPENSE	350483.75	361500.88	362950.69	364104.75	367262.06	370333.60
28							
20	INDIRECT COSTS	167373.31	172727.50	173513.81	174154.00	175342.00	176596.54
28							
21	TOTAL DEPT EXPENSE	517857.06	534228.38	536464.50	538268.75	542654.06	546430.25